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ABSTRACTS
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(Pages refer to the Japanese originals of this volume unless otherwise noted.)

Study of the Insecticidal Principle in the Smoke Produced by Combusting Insect Powder. (Part I.)

(pp. 803～805)

By Makoto NAGASE.

(Agricultural Chemical Department, Taihoku Imperial University, Taiwan;
Received July 10, 1940.)

I caught the smoke produced by combusting insect powder, which is used for mosquito coil, with 80 % methanol and 20 % sulphuric acid solutions.

After dilution the solution was distilled by steam distillation and acids, phenols, and neutral substances were separated from the distillate and bases from the mother liquor by the usual method. The yields from 1 kg powder were as follows.

Neutral substances	17 g.
Phenolic substances	7 g.
Acidic substances	2.7 g.
Basic substances	3.5 g.

To examine the insecticidal power *Drosophila melanogasters* were put in a 10 L. bottle which contained 0.03 g. of each fraction and observed for 5 min., keeping the temperature at 20°C. The percentage of those which fell down to the bottom were as follows.

Neutral substances	100 %
Phenolic substances	53 %
Acidic substances	22 %
Basic substances	0 %

From the quantity and insecticidal power, it is clear that the neutral fraction is the most important principle. But the remaining parts are also considered to have supplementary actions.

(Part II.)

From the smoke produced by combusting 20 kg insect powder, 60 g of

phenolic substance was obtained.

By fractional distillation, it was separated into two fractions of 121°/65 mm and 140～148°/65 mm.

By making derivatives of benzoate and 3,5-dinitrobenzoate, the former was decided as phenol.

Also by making derivatives of 3,5-dinitrobenzoate and aryloxy acetic acid, the latter was decided as *o*-cresol and its homolog.

On the Soil Properties in the Transitional Region of Steppe- and Brown Forest Soil in Manchuria.

(pp. 809～812)

By R. KAWASHIMA and G. SUYAMA.

(Agricultural Chemical Laboratory; Kyushu Imperial University;
Received July 8, 1940.)

In the transitional region of steppe- and brown forest soils in the western suburbs of Harbin, various soil properties change systematically regarding the increase of humidity, as already known in other countries.

For example, in accordance with the increase of humidity, the pH-values and calcium carbonate contents diminish successively and the clay contents increase.

The silica-alumina ratio and exchange capacity of colloidal clay increase in order.

On the Thermobacterium Orla-Jensen.

(pp. 813～818)

By Hideo KATAGIRI and Kakuo KITAHARA.

(Department of Agriculture, Kyoto Imperial University; Received July 8, 1940.)

We have never succeeded in the isolation of granulated, thermophilic and *l*-lactic acid producing homo-fermenters which would be included in the thermobacterium-group named by Orla-Jensen.

In the present paper, four strains of thermobacteria were isolated with fresh milk and sour mash by selective cultivations at about 50°.

All these strains never attacked pentoses, mannitol or glycerol, while vigorous fermentations were always observed with maltose and sucrose.

However, with galactose, lactose, inulin and starch, very different fermentative power was observed among these strains. Thus, it will be seen in Table I that these thermobacteria were classified into two species; *Lactobacillus lactis* and *Lactobacillus delbrückii*, according to their potency of milk coagulation and the kinds of fermentable sugars; lactose and galactose.

Table I. Classification of Thermobacterium Orla-Jensen.

No. of Bacteria	Isolated from	Milk coagulation	Lactose	Galactose	Inulin	Starch	Species
520	Milk	++	++++	+++++	0	±	L. lactis var. galactosus
521	Milk	++	+++	++++	++++	±	L. lactis var. inulinus
615	Mash	0	0	±	0	+	L. delbrückii
616	Mash	0	0	±	0	+++++	L. delbrückii

The two strains of *L. lactis* would again divide into two varieties owing to the fermentability of galactose or inulin. It is interesting to note that starch was easily fermented by one of the *L. delbrückii.*

On a new Classification of Lactic Acid Bacteria.

(pp. 819∼831)

By Kakuo Kitahara.

(Department of Agriculture, Kyoto Imperial University; Received July 8, 1940.)

We succeeded in our laboratory under the guidance of Prof. Katagiri in isolating almost all the known species of lactic acid bacteria which had ever been recorded, moreover five new species of Lactobacillus and a motile lactic acid bacteria named Bacterium caseolyticum were isolated by us, as already mentioned in the previous papers.

In the present paper, very satisfactory classification is proposed when ten characteristic natures; (1) Gram's staining, (2) form, (3) catalase, (4) manner of fermentation of glucose, (5) racemiase, (6) fermentable sugars, (7) reduction of nitrates, (8) production of mannitol or volatile acid, (9) liquefaction of gelatin, and motility, (10) habitat, were chosen among various kinds of factors, as is shown in Table I.

Table I. The key to the species of lactic acid bacteria.

a. Gram-positive.
  b. Cocci.
    c. Without catalase.
      d. Decompose glucose in the Ist type of fermentation; $C_6H_{12}O_6 = 2\,C_3H_6O_3$.
        e. Without racemiase.............................**Streptococcus** (*d*-lactic acid formers).
          f. No action on maltose.
            g. No action on sucrose..*Sc. cremoris* Orla-Jensen.
            gg. Acid in sucrose..*Sc. thermophilus* Orla-Jensen.
          ff. Acid in maltose.
            g. No action on sucrose.......................................*Sc. lactis* (Lister) Löhnis.
            gg. Acid in sucrose.
              h. No action on pentose. ....*Sc. lactis* var.
              hh. Acid in pentose and mannitol......................................**Enterococcus.**
                i. No action on glycerol..........................*Sc. faecalis* Andrewes & Horder.

ii. Acid in glycerol.
j. Gelatin not liquefied.........................*Sc. glycerinaceus* Orla-Jensen.
jj. Gelatin liquefied...*Sc. liquefaciens* Orla-Jensen.
ee. With racemiase.......................**Pediococcus** (*dl*-∼*dl*+*d*-lactic acid formers).
f. Acid in maltose...*Pc. hennebergi* Sollied.
ff. No action on maltose...*Pc. lindneri* Henneberg.
dd. Decompose glucose in the 2nd type of fermentation;
$C_6H_{12}O_6 = C_3H_6O_3 + C_2H_5OH + CO_2$..........**Leuconostoc** (*l*-lactic acid formers).
e. No action on pentose..............*Leuc. dextranicum* (Beijerinck) Hucker & Pederson.
ee. Acid in pentose...........................*Leuc. mesenteroides* (Cienkowski) Van Tieghem.
f. Produce mainly mannitol from fructose...............................*Leuc. mesenteroides* α.
ff. Produce mainly ethanol from fructose.................................*Leuc. mesenteroides* β.
cc. With catalase.......**Tetracoccus** (*d*-lactic acid formers). .....*Tc. liquefaciens* Orla-Jensen.
bb. Rods.
c. Without catalase.
d. Decompose glucose in the Ist type of fermentation.............**True Lactobacillus.**
e. Produce *l*-∼*dl*-lactic acid.
f. Acid in lactose (Habitat: mainly animal materials)..........*L. lactis* Orla-Jensen.
ff. No action on lactose
(Habitat: mainly cereal materials)..............*L. delbrückii* (Leichmann) Holland.
ee. Produce *dl*-∼*d*-lactic acid.
f. No action on pentose (Habitat: mainly animal materials).
g. No action on maltose..*L. bulgaricus* sp.
gg. Acid in maltose.
h. No action on sucrose.................................*L. casei* (Orla-Jensen) Holland.
hh. Acid in sucrose..*L. acidophilus* (Moro) Holland.
ff. Acid in pentose (Habitat: mainly cereal materials).
g. Acid in arabinose.
h. Acid in mannitol.......................*L. plantarum* (Orla-Jensen) Bergey et al.
hh. No action on mannitol...*L. sake* **nov. sp.**
gg. No action on arabinose, acid in xylose.........................*L. xylosus* **nov. sp.**
dd. Decompose glucose in the 2nd type of fermentation..
.... **Beta-Lactobacillus** (*dl*-lactic acid formers).
e. Acid in raffinose, produce mannitol from fructose or sucrose.
f. Acid in arabinose...........................*L. brevis* (Orla-Jensen) Bergey et al., α.
ff. No action on arabinose.
g. Acid in xylose...*L. fermentum* Beijerinck, α.
gg. No action on xylose...*L. betadelbrückii* **nov. sp.**
ee. No action on raffinose, produce ethanol from fructose.
f. Acid in arabinose...*L. brevis* β.
ff. No action on arabinose, produce acid generally in xylose............*L. fermentum* β.
cc. With catalase.......................................**Wild-Lactobacillus** (*d*-lactic acid formers).
d. Nitrates not reduced...*L. thermophilus* Ayers & Johnson.
dd. Nitrates reduced.
e. Volatile acid not produced...*L. ciliatus* **nov. sp.**
ee. Produce a large amount of volatile acid.
f. Gelatin not liquefied..*L. caneus* **nov. sp.**
ff. Gelatin liquefied...*Bact. caseolyticum* **nov. sp.**
aa. Gram-negative..........**Escherichia**.........(*l*-lactic acid formers revealing the 3rd type of fermentation: $2C_6H_{12}O_6 + H_2O = 2C_3H_6O_3 + C_2H_5OH + CH_3COOH + 2CO_2 + 2H_2$) ....
.... *Esch. coli* (Migula) Castellani & Chalmers.

On the Retting of Vegetable Fibre Materials. (Part XIII.)

A Useful Aerobe for the Bacterial Retting of Jute Fibre Materials.

(pp. 832～834)

By Hideo KATAGIRI and Tosio NAKAHAMA.

(Department of Agriculture, Kyoto Imperial University; Received July 13, 1940.)

An effective retting of jute fibre materials was attained by a Gram-positive, spore-bearing, non-motile bacillus among eleven aerobes isolated from the retting vats.

The useful bacillus revealed similar cultural characteristics to Bacillus fulminans Schrire and Greenfield. However, some physiological natures were found to be quite different, since indol was never produced, nitrate was not reduced and blood serum was not liquefied by the useful bacillus.

Therefore the bacillus was concluded to be a new species, and it was named *Bacillus corchorus*.

Exchangeable Calcium and Magnesium of Soils in Tyōsen. III.

(pp. 835～844)

By MISU-Hideo.

(Agricultural Experiment Station, Government General of Tyōsen; Received June 6, 1940.)

Nutritive-value of Extracted Perilla-Cake as Fodder. I～II.

(pp. 845～848)

By Michio GOTŌ.

(Agricultural Chemical Laboratory, Tokyo Imperial University; Received July 17, 1940.)

A Study on Bacteria of Korean Liquor Barm.

(pp. 849～860)

By Y. L. PAK, M. D.

(Keijo (Seoul) Chosen; Received July 3, 1940.)

The Korean yeast (Noo-Rook) is a kind of barm that contains fermenting bacteria particular to Korean liquor (Sake). Some reports have already been made on the study of the yeast in this particular barm, yet there is no literature available regarding the bacteria contained in this barm.

The author has made a study of these bacteria and isolated 14 kinds through the medium of both aerobic and anaerobic cultures, and has determined their species from the study of their biological nature, fermenting actions, and also by the products found in the culture media. They are as follows :—

1.	Micrococcus	subflavescens, No. 1,	var.	K.	C.
2.	Mycoplana	bullate, No. 1,		〃	〃
3.	〃	〃 No. 2,		〃	〃
4.	Bacillus	lentas,		〃	〃
5.	〃	repens,		〃	〃
6.	Micrococcus	conglomeratus,		〃	〃
7.	〃	Subflavescens, No. 2,		〃	〃
8.	〃	varians,		〃	〃
9.	Bacillus	ambiguus, No. 1,		〃	〃
10.	〃	〃 No. 2,		〃	〃
11.	Micrococcus	epimetheus,		〃	〃
12.	Erwina	citrimaculans, No. 1,		〃	〃
13.	〃	aroidea,		〃	〃
14.	〃	citrimaculans, No. 2,		〃	〃

Über den Azeotropismus von Aethylalkohol, Kohlenwasserstoff und Wasser. (I Mitteilung.)

(SS. 861～875)

Von M. Simo uud T. Aizawa.

(The Institute of Research on Chemical Industry, Government-General of Taiwan, Japan; Received July 26, 1940.)

Über den Schleim von *Brasenia Schreberi*, Gmel. (1)

Die Zuckerarten des Schleims. Die Gallussäure in dieser Pflanze.

(SS. 876～880)

Von Hikonojō Nakahara.

(Agrikulturchem. Laboratorium, Kaiserlich. Universität, Tokio; Eingegangen am 5. 8. 1940.)

Brasenia Schreberi ist eine in alten Teichen oder Sümpfen in der Natur vorkommende Wasserpflanze, deren Blüten-knospen und junge Blätter mit Agar-Agar-artigem Schleime umhüllt sind. Im Sommer werden die jungen zarten Blätter gepflückt und hier in Japan als Zuspeise verwendet.

Zur Analyse wird der Schleim durch Erhitzen im Autoklav verflüssigt. Nach Abkühlen wird die Flüssigkeit mit dem Gemisch einer Kupferlösung und einer Seignettesalzlösung versetzt, das bei der Zuckerbestimmung nach Bertrand erforderlich ist, und sofort scheidet sich ein flockiger Niederschlag einer Kupferver-

bindung aus, den man durch ein leinenes Tuch koliert. Den Rückstand behandelt man wiederholt mit Salzsäure-Alkohol und nach dem Trocknen stellt er sich als ein weißes Pulver mit geringem Aschengehalt dar.

Die Analyse dieses Pulvers ergibt folgende Zahlen;

Galakturonsäure Anhydrid	22.00 %
Galaktan	42.44 %
Mannan	14.80 %
Rhamnosan	11.82 %
Araban	7.75 %

Nachträglich wird hier mitgeteilt, daß in dieser Pflanze freie Gallussäure vorhanden ist.

Die Jodometrische Furfurolbestimmung. (II. Mitteilung.)

(SS. 881～885)

Matsukitiro HAMADA und Kazuyuki MAEKAWA.

(Aus dem Agriculturchemischen Institut der Kaiserlichen Kyushu-Universität in Fukuoka; Eingegangen am 10. Juli 1940.)

On a Carbohydrase Acting on the Mucilage from *Chondrus ocellatus* Holmes. (II.)

Relations of the Enzyme to Inulase, Pectinase and Gelase.

(pp. 886～890)

By T. MORI.

(Department of Agriculture, Tokyo Imperial University; Received July 26, 1940.)

On the Fixation of Sericin of Raw Silk

(Part IV.) Fixation by Basic Potassium Oxalatochromiate.

(pp. 891～894)

By Masami OKU and Zirô HIROSE.

(From the Fibre Chemical Laboratory, Ueda Imperial College of Sericulture and Silk Industry; Received July 26, 1940.)

In this report we have studied the influence of basic potassium oxalato-chromiate solution upon the fixation of sericin of raw silk.

The experimental results were summarised as follows :—

1) The mode of adsorption of anionic chromium complex-ion by α- and β-sericin when they were treated with basic potassium oxalato-chromiate solution coincides completely with the formula of Freundlich's adsorption isotherm.

2) α-Sericin absorbs much more chromium of anionic form than does β-sericin.

3) Sericin could be precipitated almost quantitatively from its sol state by basic potassium oxalatochromiate solution in the region of pH 4.7.

(Part V.) Some Experiments accounting for the Theories of Fixation by Formaldehyde.

(pp. 895～897)

By Masami OKU

There have been proposed many theories about chemical reactions between proteins and formaldehyde. The theories of fixation of sericin by formaldehyde shonld also be attributed to those which were presumed from the point of view of the studies of protein. These theories can be summarised into two classes :— (1) the formation of methylene compound, (2) the formation of addition compounds by the reaction of amino group of protein by formaldehyde. In the former case, the reaction should be carried out through condensation, splitting some molecules of water.

In this experiment I have fixed sericin by formaldehyde mixed with hydrochloric acid or sulphuric acid of certain definite concentration which acts as dehydrating agent. The degree of fixation of sericin attained its maximum point when 0.5 % formaldehyde with 2.0 % HCl or H_2SO_4 was used. When fixed with formalin alone, the degree of fixation was considerably inferior.

From this experiment the fixation of the sericin of raw silk by formaldehyde should be attributed to the formation of methylene compound through the condensation reaction between amino-groups of sericin and formaldehyde. But the structure of methylene compound thus formed could not be determined in this experiment.

On the Stimulant for Cane Sugar Formation in Plants (VII.)

(pp. 898～900)

By Tetutaro TADOKORO and Masao NISIDA.

(Hokkaido Imperial University; Received August 7, 1940.)

Über den Proteingehalt des Getreide-chennichs unter den verschiedenen Kulturumständen.

(SS. 901～904)

Von Tetujirō OHARA.

(Tokyo Nogyō Kyōiku Senmongakkō, Eingegangen am 12. 8. 1940.)
